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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/448,277	11/24/1999	WOONG SIK CHOI	8733.20015	4859

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EXAMINER

QI, ZHI QIANG

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/448,277

Applicant(s)

CHOI, WOONG SIK

Examiner

Mike Qi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,9-12,14-17 and 20-22 is/are rejected.
- 7) ☒ Claim(s) 2,7,8,13,18 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Aug. 19, 2003 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,226,057 (Lee) in view of US 5,953,088 (Hanazawa et al).**

Claims 1 and 12, Lee discloses (col. 3, line 45 – col.7, line 45; Figs.2A and 2B)

a liquid crystal display device comprising:

- substrate (12);
- first and second gate lines (14m, 14m-1) formed on the substrate (12);
- first and second source bus lines (data lines) (22n-1, 22n) intersecting the

first and second gate lines (14m, 14m-1) so as to define a pixel region, wherein each of the first data line (22n-1) and the second data line (22n) has longitudinally separated first and second regions;

- second pixel region (such as the region of the second pixel electrode 26n+1) adjacent to the first pixel region (such as the region of the first pixel electrode 26n) and adjacent to the second data line (such as data line 22n);
- insulating film (28) covering the first and the second gate lines (14m, 14m-1) and the first and the second data lines (22n-1, 22n);
- first pixel electrode (26n) disposed in the first pixel region, the first pixel electrode (26n) overlapping a region of the first data line (22n-1), and the first pixel electrode (26n) overlapping a region of the second data lines (22n);
- switching element (TFT, T1) disposed in the pixel region and connected between the second gate line (14m-1) and the pixel electrode (26n);
- second pixel electrode (26n+1) disposed in second pixel region.

Lee does not expressly disclose that the second pixel electrode overlapping one of the first and second regions of the second data line (a region of the second data line) that is not overlapped by the first pixel electrode (that is the adjacent pixel electrodes are not overlapped each other).

However, Hanazawa discloses (col.4, lines 11-27; Fig.3) that the adjacent pixel electrodes (51) and (54) are not overlapped, and the pixel electrode (51) overlaps a region of the first data line (50a) and a region of the second data line (50b), such that the capacitive coupling between the pixel electrode (51) and the data line (50a) and the

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capacitive coupling between the pixel electrode (54) and the data line (50a) can be reduced uniformly. As a result, the influence of the parasitic capacitance corresponding to the capacitive coupling can be suppressed to a minimum, so as to improve the image quality.

Since Hanazawa indicates (col.1, lines 34-40) that the image quality of the liquid crystal display device is liable to be influenced by a parasitic capacitance corresponding to a capacitive coupling between the signal line and the pixel electrode.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange the adjacent pixel electrodes are not overlapped as claimed in claims 1 and 12 for achieving the capacitive coupling being suppressed to a minimum so as to improve the image quality.

3. Claims 3-6, 9-11,14-17 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee and Hanazawa as applied to claims 1 and 12 above, and further in view of US 5,757,444 (Takemura).

Claims 5 and 16, Takemura discloses (col.6, lines 48-67; Fig.4) that the signal to be applied to the data lines Y_m and Y_{m+1} have the same pulse height and opposite polarity (alternating current driving method), and thus affection of these data lines on the picture-element electrode (pixel electrode) is mutually offset.

Takemura indicates (col.6, lins 64-67) that as a result, there occurs no cross-talk which would be induced by the coupling between the data line and the picture-element electrode (pixel electrode).

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use an alternating current driving method as claimed in claims 5 and 16 for suppressing the cross-talk phenomenon.

Claims 3, 9, 14 and 20, using reflective pixel electrode in a reflection type LCD was common and known in the art as employing high reflective material such as aluminum as the pixel electrode for achieving thin and light-weight and low electricity consuming.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to use reflective pixel electrode as claimed in claims 3, 9, 14 and 20 for achieving low electricity consuming.

Claims 4, 10, 15, and 21, Takemura discloses (col.7, lines 41-45) that the overlap between the picture-element electrode and the data line is also symmetrical between right and left side (i.e., the first and the second regions, the right side and the left side overlapping regions, are approximately the same), and by proper performing the alternation of the data line as described above, the cross-talk is completely removed.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange the first and the second region are approximately the same as claimed in claims 4, 10, 15 and 21 for removing the cross-talk.

Claims 6, 11, 17 and 22, Lee discloses (col.4, lines 30-34; Fig.2A) that the pixel electrode (26n) are beyond the adjacent source bus lines (data lines) arranged at left and right sides thereof and then extended to edges of the adjacent pixel electrodes in row direction, i.e., the pixel electrode extends over the date lines.

Allowable Subject Matter

4. Claims 2, 7-8, 13, 18 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record neither teaches nor discloses that a liquid crystal display device comprises various elements, more specifically, as the following:

the pixel electrode overlaps the first and second data lines by whole width of the data lines and by a substantially one-half length of each one of the first and second the data lines [claims 2, 8, 13 and 19; as shown in Fig.3].

Claim 7 is dependent on the claim 2; and claim 18 is dependent on the claim 13.

The closest reference US 6,226,057 (Lee) discloses (Fig.2A) that the pixel electrode (26n) overlaps the first and the second data lines (22n-1, 22n) by whole width of the data lines, but it does not teach that the pixel electrode overlaps the data lines by a substantially one-half length of the data lines.

Response to Arguments

5. Applicant's arguments filed on Aug.19, 2003 have been fully considered but they are not persuasive.

Applicant's **only** arguments are as follows:

1) The references Hanazawa and Lee both show adjacent pixel electrodes

overlapping the same data line region, and do not teach or suggest that the first pixel electrode overlaps only one of the first and the second regions of the first data line, and the second pixel electrode overlaps only one of the first and second regions of the second data line that is not overlapped by the first pixel electrode.

Examiner's responses to Applicant's **only** arguments are as follows:

1) the reference Hanazawa is a secondary reference and discloses (col.4, lines 11-27; Fig.3) that the adjacent pixel electrodes (51) and (54) are not overlapped, and the pixel electrode (51) overlaps a region of the first data line (50a) and a region of the second data line (50b). The Fig.3 of the Hanazawa shows the pixel electrodes (54) and (51) overlap the different regions of the data line (50a) and (50b), and the adjacent pixel electrodes (54) and (51) overlapping the same data line (50a) that is the same as the application such as the Fig.3 wherein both of the adjacent pixel electrodes (64) overlapping the first data line (50). The Fig.3 of Hanazawa shows the first pixel electrode (such as 54) overlaps one region of the first data line (such as 50a) and the second pixel electrode (such as 51) overlaps one region of the second data line (such as 50b); and the pixel electrodes (54) and (51) are not overlapped. Hanazawa discloses (col.4, lines 11-27; Fig.3) that the capacitive coupling between the pixel electrode (51) and the data line (50a) and the capacitive coupling between the pixel electrode (54) and the data line (50a) can be reduced uniformly. As a result, the influence of the parasitic capacitance corresponding to the capacitive coupling can be suppressed to a minimum, so as to improve the image quality.

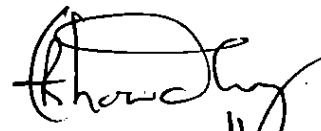
Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mike Qi
December 8, 2003


T. Chowdhury
Primary Examiner